



②特願昭 46-57554 ①特開昭 48-24984

④公開昭 48.(1973) 3.31 (全 2 頁)

審査請求 無

許 願

昭和 46 年 8 月 2 日

⑬ 日本国特許庁

公開特許公報

特許庁長官 井 土 武 久 殿

1. 発明の名称

多孔性物質への有効成分吸着法

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明 細 書

1. 発明の名称

多孔性物質への有効成分吸着法

2. 特許請求の範囲

減圧タンクにて有効成分を混入した液体中に多孔性物質を沈めて減圧し多孔性物質中の空気を抽出した後常圧にもどすことにより多孔性物質に有効成分を吸着させる方法

3. 発明の詳細な説明

本発明は、多孔性物質に有効成分を吸着させる方法に関し、詳しくは減圧により紙、布または発泡性樹脂等の多孔性物質に有効成分を均一かつ迅速に吸着させる方法に関する。

従来、スポンジ等に薬物を吸着させたマスク用フィルター等を製造する場合には、スポンジを薬物液中でローラーにより機械的に圧搾して吸着する方法が用いられているが、この方法は

庁内整理番号

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⑤日本分類

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弾力性のない発泡性樹脂には適用できず、しかも薬物を混入した液体の種類、濃度等によっても吸着が困難となり、また吸着可能であつても均一に吸着することができず、かつ長時間を要する。本発明者らは、これらの欠点を除去すべく検討した結果本発明を完成したのである。

本発明は、減圧タンクにて有効成分を混入した液体中に多孔性物質を沈め、減圧して多孔性物質中の空気を抽出した後常圧にもどすことにより多孔性物質に有効成分を吸着させる方法である。本発明において用いる有効成分としては、たとえば有害ガス除去剤、医薬、香料、殺虫剤、防・消臭剤等を挙げることができる。溶剤としては水またはアルコール等の有機溶剤を用いる。また有効成分を混入したときの液体は、溶解液、懸濁液または乳化液等であつて、その種類を問わない。この液体には必要に応じ結合剤、酸化防止剤、着色剤等の混入が可能である。減圧するに際しては、多孔性物質の体積、孔径、液体の種類、濃度その他の性質に応じて減圧力、減圧時間を適宜変化さ

せて行ない、その後常圧にもどして乾燥させる。
 乾燥終了後は、多孔性物質を取り出し乾燥して目的物を得る。

本発明の方法で られる目的物は、たとえば有効成分として有害ガス除去剤を用いた場合にはマスタ用フィルターとして、また殺虫剤もしくは防・消臭剤を用いた場合には除放性の殺虫樹脂板もしくはトイレット用防・消臭ボールとして使用できるなど広い用途を有する。

本発明の方法は、これらの目的物を得るに關し、多孔性物質に有効成分を均一かつ迅速に浸透させることができ、しかも従来法に比し、有効成分を導入した媒体の種類・濃度のいかにかわらずまた多孔性物質の孔径、体積または硬度にかかわりなく浸透させることができる。

次に実施例を挙げて説明する。

実施例

炭酸ソーダ 1.6 ㍑、活性炭 2.4 ㍑および 0.4 ㍑ 1.0 ㍑からなる有害ガス除去剤を水 9.4 ㍑に導入してタンクに入れ、更に該液中にモルトブレー

ンを浸して密封した後真空ポンプにより 4.5 mmHg に減圧する。その後常圧にもどし（必要あらば更に減圧をくり返す）、モルトブレーンを乾燥してこれを適当な大きさに切断し、マスタ用フィルターを得る。

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5. 添附書類の目録

- | | |
|-------------|-----|
| (1) 明 細 書 | 1 通 |
| (2) 要 任 状 | 1 通 |
| (3) 願 書 願 本 | 1 通 |

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PATENT APPLICATION
August 2, Showa 46[1971]

To: Mr. Takehisa INOUE, Minister of the Patent Office

1. TITLE OF THE INVENTION

ADSORPTION METHOD OF ACTIVE COMPONENTS TO A POROUS
SUBSTANCE [Takosei busshitsu eno yukooseibun kyuuchakuho]

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[round stamp indicating August 2, 1971, Patent Office, Application Section 2,
[illegible]]

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5. CONTENTS OF ATTACHED DOCUMENTS

(1) specification 1

(2) letter of attorney 1

(3) copy of application 1

(11) Patent Kokai [laid-open] Publication No. : Sho 48[1973]-24984

(19) JAPANESE PATENT OFFICE

PATENT KOKAI PUBLICATION

(22) Patent Application No. : Sho 46[1971]-57554

(43) Patent Kokai Publication Date: March 31, 1973 (Total 2 pages [in Japanese original])

Examination Request : Not Requested

Interoffice Classification No. (52) Japan Classification No.

6415 41

13(9) F2

[Amendments: There are no amendments attached to this patent.]

[Note: All names, addresses, company names, and brand names are translated in the most common manner. Japanese language does not have singular or plural words unless otherwise specified with numeral prefix or general form of plurality suffix. Translator's note]

SPECIFICATION

1. TITLE OF THE INVENTION

ADSORPTION METHOD TO ADSORB ACTIVE COMPONENTS TO A POROUS SUBSTANCE

2. CLAIMS

A method to adsorb active components on a porous substance by immersing a porous substance in a liquid in which active components are mixed in a pressure tank, and by reducing a pressure to exhaust air that is within said porous substance, and then by returning this to a regular pressure.

3. DETAILED EXPLANATION OF THE INVENTION

This invention relates to a method to adsorb active components on a porous substance; and in further detail, this invention relates to the method that adsorbs active components on a porous substance such as paper, cloth, or foam resin and the like quickly and uniformly through pressure reduction.

When manufacturing filters and the like for masks of sponge and the like on which drugs are adsorbed, a method to mechanically press said sponge in a drug solution through use of a roller for purpose of adsorption has been used; however, this method cannot be applied to a foam resin that lacks elasticity, and above all, adsorption presents difficulty based on types or concentration and the like of the liquid in which drugs are mixed; and even when said adsorption can be done, it is not possible to attain a uniform adsorption in addition to requiring long hours. The inventors completed this invention as a result of studies conducted to remove these defects.

This invention relates to the method to adsorb active components on a porous substance by immersing a porous substance in a liquid in which active components are mixed in a pressure tank, and by reducing a pressure to exhaust air that is within said porous substance, and then by returning this to a regular pressure. Regarding active components which are used in this invention, for instance, poisonous gas removing agents, drugs, perfumes, insecticides, or odor preventive or deodorizing agents and the like may be mentioned. As solvents, organic solvents such as water or alcohol and the like may be used. In addition, the liquid in which active components are mixed may be of any types including solution, suspension liquid, or emulsion liquid and the like. It is all right to mix binders, antioxidants, or coloring agents and the like in this liquid as needed. During pressure reduction, to-be reduced pressure or pressure reduction time may be appropriately varied in accordance with volume or pore diameter of the porous substance, types or concentration of the liquid body and other properties; and it is returned to the regular pressure afterwards to be adsorbed. When adsorption is completed, porous substance is taken out and dried to give a substance that is targeted.

As for the targeted substances which can be given through this invention's method, it shows wide scope of applications, for instance, when poisonous gas removing agents are used as active components, it may be used as a filter for masks; and in addition, when insecticides or odor preventive or deodorizing agents are used, it may be used as insecticidal resin panel with gradual release property, or odor preventing or deodorizing pole for toilette use.

According to this invention's method, it is possible to adsorb active components on a porous substance uniformly as well as quickly when preparing said targeted substances, and above all, compared to conventional method, despite of types or concentration of liquid in which active components are mixed as well as pore diameter, volume or hardness of said porous substance, it is possible to allow adsorption.

Further explanation is given below in reference with an example.

EXAMPLE

A poisonous gas removing agent comprising 1.5g [illegible] of sodium carbonate, 2.4g of active charcoal, and 1.0 g [illegible] of OMO was mixed in 94.8 g of water and this was placed in a tank; and in addition, after immersing a MOLUTOPLANE [transliteration] and sealing this, pressure was reduced to 45 mmHg. Then, it was returned to regular pressure (repeat pressure reduction further if needed), and said MOLUTOPLANE was dried, and cut to appropriate size to give a filter for masks.